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#### ABSTRACT

The topics covered by 47 booklets in the series are indexed. Page references are not given, but the booklet covering each topic is indicated by a code explained in the first two pages of the index. A brief account of the educational services program of the Atomic Energy Commission describing the booklets, films, and other services provided for secondary school students and teachers is appended. Topics covered by the series include applications of radioisotopes in industry, aerospace, agriculture, medicine, and scientific research; effects and sources of natural and artificial radiation; descriptions of nuclear facilities and reactors and their operations; and the chemistry of radioactive elements of other substances studied by Atomic Energy Commission scientists. A booklet on careers and a glossary are included in the series. (AL)



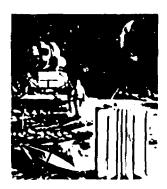






INDEX TO THE UNDERSTANDING THE ATOM SERIES







U. S. ATOMIC ENERGY COMMISSION / Division of Technical Information

B S DEPARTMENT OF MEALTH, EDUCATION & WILLFARE OFFICE OF EDUCATION

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## The Understanding the Atom Series

Nuclear Energy is playing a vital role in the life of every man, woman, and child in the United States today. In the years ahead it will affect increasingly all the peoples of the earth. It is essential that all Americans gain an understanding of this vital force if they are to discharge thoughtfully their responsibilities as citizens and if they are to realize fully the myriad benefits that nuclear energy offers them.

The United States Atomic Energy Commission provides this booklet to help you achieve such understanding.

Edward J. Brunenkant, Director Division of Technical Information

UNITED STATES ATOMIC ENERGY COMMISSION

Dr. Glenn T. Seaborg, Chairman James T. Ramey Wilfrid E, Johnson Francesco Costagliola



### Introduction to the Index

Nuclear science comprises many categories of knowledge, many distinct scientific disciplines, and many experimental approaches. Its theories reinforce, complement, and a applement much other theory. Its basic technology is interwoven with the techniques and equipment common to all science. Applications of nuclear energy are found in industrial, governmental, medical, engineering, agricultural, and business enterprises.

This index has been prepared to provide a key to these many doors, by introducing users of the *Understanding the Alom* booklets to the complete subject matter embraced in the series. It is intended to help students and teachers locate points of their specific interests, and to provide a means for correlating the various principles and uses of atomic energy. In this endeavor it also may help to supply insight.

The index covers all booklets in the *Understanding the Atom* series. Titles of these are arranged alphabet! ally on the pages following, together with the codes used for identification of the booklets in the body of the index.

This publication was prepared to aid students and teachers who have several volumes or complete sets of the Understanding the Atom booklets available. As the series is enlarged or modified, new versions of this index are prepared.

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# Abbreviation Listing by Title

ACCELERATORS	ACC
ANIMALS IN ATOMIC RESEARCH	AAR
ATOMIC FUEL	ATF
ATOMIC POWER SAFETY	APS
ATOMS AT THE SCIENCE FAIR	ASF
ATOMS IN AGRICULTURE	AIA
ATOMS, NATURE. AND MAN	ANM
CAREERS IN ATOMIC ENERGY	CAE
COMPUTERS	СОМ
CONTROLLED NUCLEAR FUSION	CNF
CRYOGENICS	CRY
DIRECT CONVERSION OF ENERGY	DCE
FALLOUT FROM NUCLEAR TESTS	FNT
FOOD PRESERVATION BY IRRADIATION	FPI
GENETIC EFFECTS OF RADIATION	GER
LASERS	LAS
MICROSTRUCTURE OF MATTER	MSM
NEUTRON ACTIVATION ANALYSIS	NAA
NONDESTRUCTIVE TESTING	NDT
NUCLEAR CLOCKS	NCL
NUCLEAR ENERGY FOR DESALTING NUCLEAR POWER AND MERCHANT SHIPPING	NED
	NPS
NUCLEAR POWER PLANTS	NPP
NUCLEAR PROPULSION FOR SPACE	NPR
NUCLEAR REACTORS	NRC
NUCLEAR TERMS, A BRIEF GLOSSARY	NTO
OUR ATOMIC WORLD	OAW
PLOWSHARE	PSH FLU
PLUTONIUM  POUTE TRONG DA DIO CONTROLO	
POWER FROM RADIOISOTOPES	PFR PRP
POWER REACTORS IN SMALL PACKAGES	RAW
RADIOACTIVE WASTES	RLP
RADIOISOTOPES AND LIFE PROCESSES RADIOISOTOPES IN INDUSTRY	RII
RADIOISOTOPES IN INDUSTRI	RIM
RARE EARTHS. THE FRATERNAL FIFTEEN	REA
READING RESOURCES IN ATOMIC ENERGY	RAE
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SNAP: NUCLEAR SPACE REACTORS	SNP
SOURCES OF NUCLEAR FUEL	SNF
SPACE RADIATION	SPR
SYNTHETIC TRANSURANIUM ELEMENTS	STE
THE ATOM AND THE OCEAN	AAO
THE CHEMISTRY OF THE NOBLE GASES	TNG
THE FIRST REACTOR	TFR
WHOLE BODY COUNTERS	WBC
YOUR BODY AND RACIATION	YBR
TOOK HODE VAN KATIVIIM	1 DA



# Abbreviation Listing by Code

AAO	THE ATOM AND THE OCEAN
AAR	ANIMALS IN ATOMIC RESEARCH
ACC	ACCELERATORS
AIA	ATOMS IN AGRICULTURE
ANM	ATOMS, NATURE, AND MAN
APS	ATOMIC POWER SAFETY
ASF	ATOMS AT THE SCIENCE FAIR
ATF	ATOMIC FUEL
CAE	CAREERS IN ATOMIC ENERGY
CNF COM	CONTROLLED NUCLEAR FUSION
COM	COMPUTERS
DCE	CRYOGENICS DIRECT CONVERSION OF ENERGY
FNT	FALLOU'T FROM NUCLEAR TESTS
FPI	FOOD PRESERVATION BY IRRADIATION
GER	GENETIC EFFECTS OF RADIATION
LAS	LASERS
MSM	MICROSTRUCTURE OF MATTER
NAA	NEUTRON ACTIVATION ANALYSIS
NCL	NUCLEAR CLOCKS
NDT	NONDESTRUCTIVE TESTING
NED	NUCLEAR ENERGY FOR DESALTING
NPP	NUCLEAR POWER PLANTS
NPR	NUCLEAR PROPULSION FOR SPACE
NPS	NUCLEAR POWER AND MERCHANT SHIPPING
NRC	NUCL EAR REACTORS
NTG	NUCLEAR TERMS, A BRIEF GLOSSARY
OAW	OUR ATOMIC WORLD
PFR	POWER FROM RADIOISOTOPES
PLU	PLUTONIUM
PRP	POWER REACTORS IN SMALL PACKAGES
PSH	PLOWSHARE
RAE	READING RESOURCES IN ATOMIC ENERGY
RAW	RADIOACTIVE WASTES
REA	RARE EARTHS, THE FRATERNAL FIFTEEN
RER	RESEARCH REACTORS
RII	RADIOISOTOPES IN INDUSTRY
RIM RLP	RADIOISOTOPES IN MEDICINE RADIOISOTOPES AND LIFE PROCESSES
SNF	SOURCE OF NUCLEAR FUEL
SNP	SNAP: NUCLEAR SPACE REACTORS
SPR	SNAP! NUCLEAR SPACE REACTORS  SPACE RADIATION
STE	SYNTHETIC TRANSURANIUM ELEMENTS
TFR	THE FIRST REACTOR
TNO	THE CHEMISTRY OF THE NOBLE GASES
WBC	WHOLE BODY COUNTERS
YBR	YOUR BODY AND RADIATION



# INDEX TO THE UNDERSTANDING THE ATOM SERIES

Accelerators development, ACC uses, ACC, MSM Accidents (see Safety) Activation analysis, NAA use in oceanographic studies, AAO determination by measurement of radioisotopes, NCL Agriculture radicisotope uses in, AlA liquification, CRY Americium discovery, STE Araino acida stud'es using radioisotopes, RLP Analysis (activation), NAA use in oceanographic studies, AAO Animala studies of metabolism and putrition using radiolsolopes, AIA studies using whole body counters, WBC use in stomic research, AAR Antiferromagnet description, CRY Antiparticles description, MSM Argon discovery, properties, and uses, TNG occurrence and production, TNO Arsole-14 use in brain-tumor diagnosis, RIN Astrea Bystem description, CNF Atmosphere fallout behavior in, FNT space radiation in, SPR Atomic bombs (see Nuclear explosions and explosives)

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Deoxyribonucleic scid



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Fossila	Industry
and determination NOS	10000 mana da 1 4 0



nondestructive testing methods Magnetohydrodynamic energy In. NDT conversion description and uses, DCE radiation and radiotsotope uses in, RII Magnetosphere trapping of radiation by, SPR meri gases (see Noble gases) Magneta Insects role of cryogenics in superconducting, CRY destruction and studies using radio-Isotopes, AAR, AIA Instruments fallout effects on, and prodetection of apace radiation by, tection from, FNT SPR radiation effects, somatic, development for oceanographic YBR whole body counters for, WBC studies, AAG insulating materials Manhattan District use in maintaining low temperaformation, TFR tures, CRY Masers (optic) International Atomic Energy (see Lasers) Agency estabiishment, OAW (see also Matter) lodine-131 conservation and relation to uptake by man from fellout, energy, MSM FNT Materiala (radioactive) use in medical diagnosis, RIM control in nuclear power Iodine-132 plants, APS use in thyroid studies, RiM Materials testing nondestructive techniques, fonosphere adiation environment of, SPR NDT, RE iron-59 Matter use in tests involving red (see also klass) blood cells, RIM equivalence with energy, OAW inicrostructure, MSM Isotopes: (see also RadioIsotopes) properties at low temperatures, discovery, OAW ĆRY states of, solid, liquid, gas, plasma, CRY structure theory, OAW Krypton discovery, properties, and uses, Medicine TNO radiation and radioisotops uses in, AAR, RIM occurrence and production, TNO Explos diffuoride (Kr Fi) preparation and properties, TNG use of cryosurgery, CRY reaction with metal fluorides to use of lasers as surgical tools, form addition compounds, TNG LAS Mendelevium Laborainries discovery, STE animal care in, AAR Merchant vessels Labers propulaton using nuclear development and application, LAS power, NPS LAWTODCIUM Meanna discovery, STE properties, MSM Leptons Metale properties, MSM electrical conductivity, effects Licensing and regulation of low temperatures on, CRY Minerale nuclear power plants, APS Light (cobe rept) age determination, NCL (see Lasers) Natural gas Lighthouses teserves, ATF power for, AAO, PFR Linear accelerators Navagational Corices use of ENAP generators in, development, ACC PFR

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TNO

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RER



radioisotopes, RLP

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Rocks	uptake by man from fallout,
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careers in, CAE	heat radiation from, CRY
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Screwworm fly	Synchrotrons
destruction using radiation, AAR,	development, ACC
AIA	Systems for Nuclear Auxiliary
Seg water	Power
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Ships	radioisotope use in, PFR
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# Educational Services Program of the U. S. Atomic Energy Commission

The U.S. Atomic Energy Commission provides free educational materials and teaching aids for the use of students, teachers, and others. As part of this activity to disseminate knowledge about atomic energy, the AEC publishes the *Understanding the Atom* series, a group of booklets devoted to many aspects of nuclear science and technology. This volume is an index to and a part of the series. Titles of other booklets are listed on the inside back cover.

Booklets in the series treat the subject matter at several levels of complexity and in various depths. Some cover broad areas, some are limited to narrower fields. For example, "Our Atomic World" is a moderately technical general introduction to atomic science, emphasizing the historical development of present knowledge. The booklet "Plutonium" is a fairly comprehensive and specific treatment of this nuclear-age metal. "Nuclear Reactors" is an easy-reading, less technical description of the basic machine of the nuclear age.

Understanding the Atom booklets typically are useful for high school students who have completed one year of science, are now taking a science course, or have a particular interest in nuclear topics. Most are suitable as supplementary reading resources for pre-college level chemistry, physics, biology, or earth science. A few encompass materials not found in detail in beginning college texts, and so may interest undergraduates; among these, for instance, is "Rare Earths: the Fraternal Fifteen". Several are usable by junior high school pupils (particularly "Animals in Atomic Research") or, in whole or part, by elementary school pupils (for example, "Nuclear Power and Merchant Shipping"),

All the booklets are written in nontechnical language. Mathematical explanations are minimal. All may be sources of information for adult audiences. Such booklets as "Fallout from Nuclear Tests" or "Nuclear Power Plants" are appropriate in this capacity. Still others, for example "Computers" or "Neutron Activation Analysis", supply background information for persons who

are about to begin training in a new field.



Each booklet contains a list of references to other sources of information, including books, articles, and motion pictures. There is, additionally, a booklet, "Reading Resources in Atomic Energy", that provides a more complete bibliography.

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